

# The Road to NASA

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# University of Alabama at Birmingham

- September 2000-December 2004
- Integrated Biomedical Science Program
  - Department of Pathology
- Initial laboratory-Dr. Terry Bray-CBSE
- Final laboratory-Dr. Jay McDonald-Pathology



# Center

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# Alabama Space Grant Consortium



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## Welcome!

"Alabama Space Grant offered under NASA training grant."

The Alabama Space Grant Consortium (ASGC) includes seven Ph.D. - granting universities, all with space - related research activities, seven affiliates and the US Space & Rocket Center. Several other small colleges and schools in Alabama are affiliated with Space Grant Activities through the NASA EPSCoR program. NASA's Marshall Space Flight Center is an ex-officio member of the consortium. As a participant in the National Space Grant College and Fellowship Program, the ASGC promotes America's preeminence in aerospace into the next century.

The consortium is housed in Huntsville, home to NASA's Marshall Space Flight Center, making available NASA's technology to all Alabama institutions of higher education. The consortium, established in 1989, leverages its NASA funds by more than 2-to-1.





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# NASA Graduate Student Researchers Program



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**GSRP FY2010 IMPORTANT DATES**  
Announcement Opportunity Release Date: **January 6, 2010**  
Application Deadline: **March 8, 2010**  
Selections Announcement: **May 2, 2010**

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Responsible NASA Official:  
Linda Rodgers  
Office of Education

**GSRP PROGRAM DESCRIPTION:**



The NASA Graduate Student Researchers Program (GSRP) is an Agency-wide fellowship program (also called GSRP Training Grants in what follows) for graduate study leading to masters or doctoral degrees in the fields of science, mathematics, and engineering related to NASA research and development. This twelve month award strongly encourages a research experience at the NASA center extending the GSRP Fellowship.

The goal of NASA's GSRP is to cultivate additional research ties to the academic community, to help meet the continuing needs of the Nation's aeronautics and space workforce requirements by increasing the number of highly trained scientists and engineers in aeronautics and space-related disciplines. Research opportunities described on the GSRP Web site are assessed and updated annually to complement the mission requirements of NASA.

**Underrepresented groups in science, technology, engineering, and mathematics fields (STEM) are encouraged to apply.**

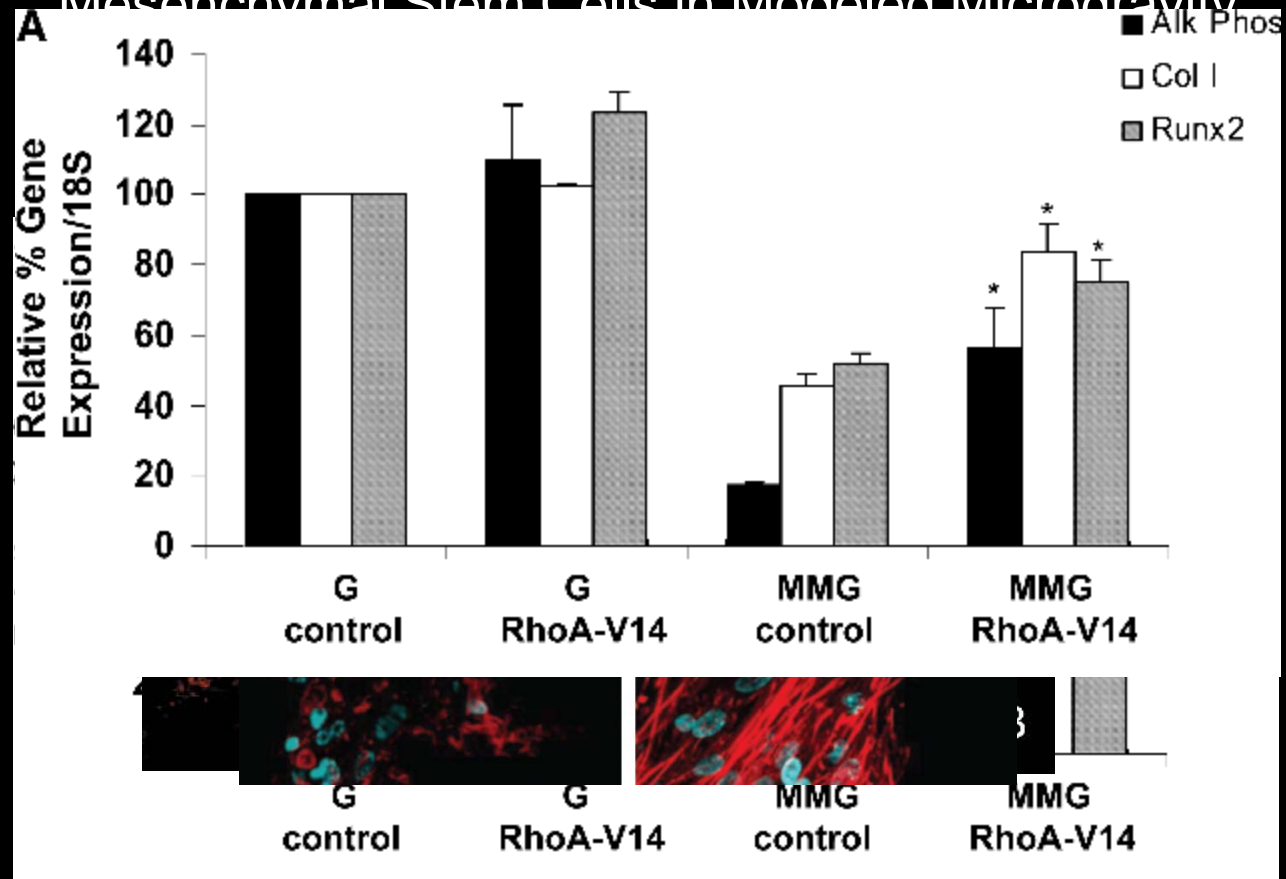
**Questions should be directed to the GSRP center contact listed on the above "Contact" link.**

**HOW TO GET STARTED WITH YOUR GSRP APPLICATION:**

1	<b>ANNOUNCEMENT OF OPPORTUNITY</b>	Learn about the program, its eligibility requirements, how to apply and reporting requirements. (Adobe PDF Format - <a href="#">Get Adobe PDF Reader</a> )	
2	<b>RESEARCH OPPORTUNITIES</b>	Find the best matching research opportunity at various NASA centers and coordinate your proposed research topic with the Center Technical Advisor.	
3	<b>ONLINE APPLICATION</b>	The deadline for online application has passed!	

# Human Mesenchymal Stem Cell Research

RhoA and Cytoskeletal Disruption Mediate Reduced Osteoblastogenesis and Enhanced Adipogenesis of Human Mesenchymal Stem Cells in Modeled Microgravity



# Texas Commission on Environmental Quality

- Evaluate air permit applications
- Develop Effects Screening Levels
- Evaluate environmental data (air, water, and soil)
- Evaluate ambient air monitoring data



# Texas Commission on Environmental Quality

- Contribute toxicological expertise to agency enforcement and emergency-response activities
- Notify private drinking-water well owners of potential groundwater contamination
- Review remediation-related documents for state and federal Superfund sites.



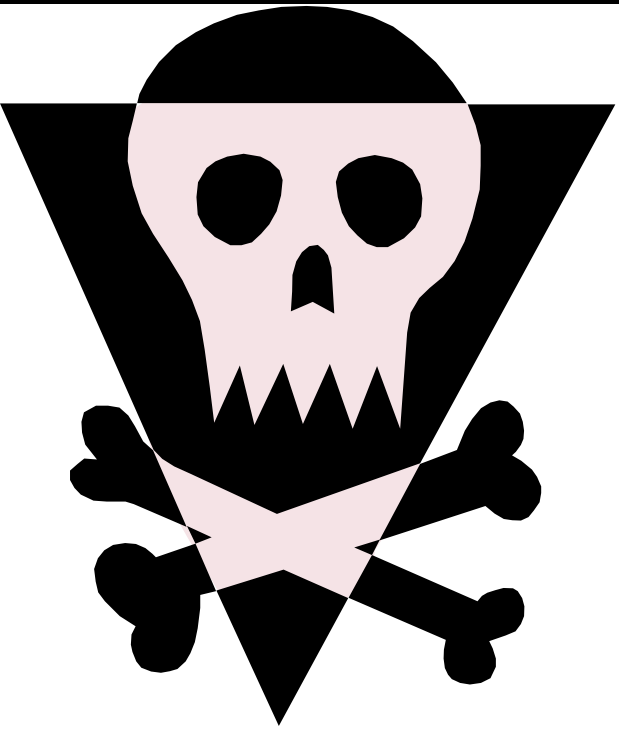


# Spaceflight Toxicology

- Mission
  - To protect crews from toxic exposures during spaceflight



# Assessing Health Hazards



- Payload chemicals
  - Composition
  - Concentration
  - Volume
- Irritancy Potential
  - Eye
  - Respiratory
  - Skin
- Systemic Toxicity



# Setting Limits

- Spacecraft Maximum Allowable Concentrations (SMACs)
- Spacecraft Water Exposure Guidelines (SWEGs)



# Offgas Testing

- "Materials used in habitable areas of spacecraft, including the materials of the spacecraft, stowed equipment, and experiments, must be evaluated for flammability, odor, and offgassing characteristics".



# Monitoring

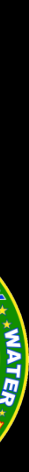
- **Real-time**
  - Carbon dioxide monitor (CDM)
  - compound specific analyzer for combustion products (CSA-CP)
  - Air quality monitor (AQM)
- **Post-flight**
  - Grab sample containers
  - Formaldehyde badges





# Lunar Airborne Dust Toxicity Advisory Group (LADTAG)

- Formed in 2005 to address the problem of setting health standards for astronaut exposure to lunar dust
- Animal instillation, inhalation, and ocular experiments are being performed to set permissible exposure limits for astronaut exposure to lunar dust.



# Special Studies















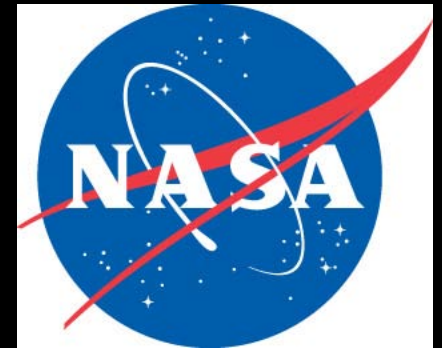






# Spaceflight Research Careers

- NASA (<http://www.usajobs.opm.gov/>)
- Wyle (<http://careers.wyle.com/>)
- USRA (<http://www.usra.edu/cs/careers>)



# Summary

- Collaborate at UAB
- Network
  - Conferences
  - Visiting Speakers
- Embrace Detours
- Keep the Dream Alive

